Balram Mandal

ROLL.NO-30

EXP.NO-09

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| import numpy as np  *# 1. Array Creation Techniques* print("1. Array Creation Techniques")   |  | | --- | | 1. Array Creation Techniques |   array\_from\_list = np.array([1, 2, 3, 4, 5]) array\_from\_list   |  | | --- | | array([1, 2, 3, 4, 5]) |   array\_arange = np.arange(0, 10, 2) array\_arange   |  | | --- | | array([0, 2, 4, 6, 8]) |   array\_linspace = np.linspace(0, 10, 5) *# Divides 0 to 10 into 5 points* array\_linspace   |  | | --- | | array([ 0. , 2.5, 5. , 7.5, 10. ]) |   *# d. Using zeros()*  array\_zeros = np.zeros((3, 3)) array\_zeros  array([[0., 0., 0.], [0., 0., 0.],  [0., 0., 0.]])  *# e. Using ones()*  array\_ones = np.ones((2, 2)) array\_ones  array([[1., 1.], [1., 1.]])  *# f. Using eye() for identity matrix* array\_eye = np.eye(3) array\_eye  array([[1., 0., 0.], [0., 1., 0.],  [0., 0., 1.]]) |

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| *# g. Using random() for random values* array\_random = np.random.random((3, 3)) array\_random  array([[0.6120712 , 0.65737 , 0.87980231], [0.34704021, 0.14296831, 0.47257887],  [0.58369679, 0.36787988, 0.28151596]])  *# 2. Different NumPy Methods* print("\n2. NumPy Methods")   |  | | --- | | 2. NumPy Methods |   *# a. Reshaping an array*  reshaped\_array = np.arange(1, 10).reshape(3, 3) reshaped\_array  array([[1, 2, 3], [4, 5, 6],  [7, 8, 9]])  transposed\_array = reshaped\_array.T transposed\_array  array([[1, 4, 7], [2, 5, 8],  [3, 6, 9]])  array\_math = np.array([1, 2, 3]) array\_math + 2 array\_math \* 3 np.sqrt(array\_math)   |  | | --- | | array([1. , 1.41421356, 1.73205081]) |   np.sum(array\_math) np.mean(array\_math) np.max(array\_math) np.min(array\_math)   |  | | --- | | np.int64(1) |   *# e. Concatenation of arrays* array\_a = np.array([1, 2, 3]) array\_b = np.array([4, 5, 6])  concat\_array = np.concatenate((array\_a, array\_b)) concat\_array  array([1, 2, 3, 4, 5, 6]) |

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| *# f. Sorting an array*  unsorted\_array = np.array([3, 1, 4, 2]) sorted\_array = np.sort(unsorted\_array) sorted\_array   |  | | --- | | array([1, 2, 3, 4]) |   *# g. Indexing and Slicing*  indexed\_value = array\_math[1] *# Indexing* indexed\_value  sliced\_array = array\_math[1:3] *# Slicing* sliced\_array   |  | | --- | | array([2, 3]) |   *# h. Boolean Masking* boolean\_mask = array\_math > 2 boolean\_mask  array\_math[boolean\_mask]   |  | | --- | | array([3]) | |